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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/505,627 | 02/16/2000 | Nobuhiro Ito | 35.C14241 | 5922 |

5514 7590 12/14/2005

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| EXAMINER |
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TALBOT, BRIAN K

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/505,627

Applicant(s)

ITO, NOBUHIRO

Examiner

Brian K. Talbot

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 57-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 70 is/are allowed.
- 6) ☒ Claim(s) 57-69 and 71-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 7/7/00 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/5/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/5/05 has been entered.
2. Claims 57-80 have been added and are the only remaining claims active in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. In light of the amendment filed 10/5/05, the 35 USC 112 rejection has been withdrawn, however, the following rejection has been applied. Also, the 35 USC 103 rejection over Dean et al. (5,726,529) has been withdrawn.

Drawings

5. Figures 26-29 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37

Art Unit: 1762

CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. Claims 64 and 79 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 64, the phrase "forming the film" is not further limiting as the independent claim recites "applying liquid for a film" and there are no other "process steps" recited to infer that a film was not formed already.

With respect to claim 79, the phrase "drop by drop" is confusing as it is unclear whether this is performed by the nozzle as an alternative to the nozzle or as part of the bubble generating technique. Clarification is requested.

Claim Rejections - 35 USC § 103

7. Claims 57-69 and 71-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spindt et al. (5,614,781) or Nonomura et al. (5,083,058) further in view of Roman et al. (5,721,050) further in view of EP 851,458.

Spindt et al. (5,614,781) (abstract, Fig. 2A,6,9B,12A-12D, col. 2, line 28 – col. 4, line 10) and Nonomura et al. (5,083,058) (abstract, Fig. 5, col. 3, line 50 – col. 4, line 15) both teach coating the spacer walls and spacer bottoms with a conductive material including electrodes by a variety of coating processes including, spraying, dipping, evaporation, sputtering, CVD, printing, etc.

While the Examiner acknowledges the fact that the references are silent upon the coating material being liquid and the coating being emitted, it is the Examiner's position that these coating techniques disclosed above incorporate a "liquid" coating material and a source of the coating material, i.e. emitter. Hence, the claimed limitations are taught or at least suggestive by the prior art.

Spindt et al. (5,614,781) or Nonomura et al. (5,083,058) fail to teach the spacers having rounded edges, i.e. "no acute angle with a flat bottom surface".

Roman et al. (5,721,050) teaches glass polyhedrons that are used as spacers for plasma display screens. The spacers have "rounded corners" having a radii curvature of less than 10 microns through a series of drawing stages (col. 2, line 5-60 and Fig. 2A).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Spindt et al. (5,614,781) or Nonomura et al. (5,083,058) spacers by forming "rounded corners" as evidenced by Roman et al. (5,721,050) with the benefits associated therewith as noted by Roman et al. (5,721,050).

Spindt et al. (5,614,781) or Nonomura et al. (5,083,058) in combination with Roman et al. (5,721,050) fail to teach coating the spacer by a bubble generator using thermal energy or piezoelectric, i.e. ink-jet method.

Art Unit: 1762

EP 851,458 teaches coating the spacer with an ink-jet method by piezoelectric or bubble jet (pg. 15, lines 5-15).

Therefore it would have been obvious at the time the invention was made to have modified Spindt et al. (5,614,781) or Nonomura et al. (5,083,058) in combination with Roman et al. (5,721,050) to have incorporated an ink-jet method for coating as evidenced by Shibata et al. (6,153,973) with the expectation of achieving similar success.

With respect to the claim reciting a nozzle, spraying and drop by drop method, it is the Examiner's position that ink-jet methods including bubble-jet and piezoelectric elements are known to utilize at least one nozzle as an "ejector" to apply the coating material by spraying or droplets.

Allowable Subject Matter

8. Claim 70 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to teach the spacer substrate having the relationship claimed after the pretreatment step. While the step of forming rounded spacers is commonplace in the coating art, the particular relationship claimed would not be.

Response to Amendment

10. Applicant argued that Nonomura et al. (5,083,058) teaches a notch in the bottom of the spacer and therefore does not teach a flat bottom surface.

The Examiner agrees in part. While the Examiner acknowledges the fact of a notch as depicted in 2B, the notch as well the outside of the notch depicts a flat surface and this still meets the claimed limitation. The claims do not recite that the “entire first surface be flat” as argued. A spacer having only a portion of the bottom surface flat would meet the limitations recited in the claim.

Applicant argued that the EP 851,458 (Shibata ‘973) does not teach coating a “part of the corner portion” of the spacer.


While the Examiner agrees in part, the reference is relied upon for teach the conventionality of using ink-jet method for applying coatings to spacers and not for the particular coating or application process. These features are shown by the primary references. Applicant may argue that one must take the entire disclosure and not only that portion to which is needed to substantiate the rejection. The Examiner agrees in principal, however, it is the Examiner’s position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar success for coating the side and bottom surfaces with an ink-jet method. The particular method of application would not “destroy” the prior art’s process or for that matter be unexpected to be capable of success.

Art Unit: 1762

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 12/12/05
Brian K Talbot
Primary Examiner
Art Unit 1762

BKT